AN ORGANIZATIONAL ANALYSIS OF THE HARPOON ILS ORGANIZATION

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THESIS

AN ORGANIZATIONAL ANALYSIS
OF THE
HARPOON ILS ORGANIZATION

by

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The objective of this thesis was to analyze the organizational effectiveness of the Harpoon ILS organization. Specifically the study attempts to answer the question: How does the Harpoon ILSMT function and how effective is it in achieving ILS objectives? Four aspects of this question

were addressed: (1) an analytical description of the ILSMT, (2) an assessment of the ILSMT and its supportive role, (3) an evaluation of current ILSMT effectiveness, and (4) recommendations for improved ILS organizational design. The author chose to view the organization as a system of mutually dependent variables (modern organization theory) and selected Scott's Model as the vehicle for analysis. Although the ILSMT is composed of personnel from varied functional commands, the contractor, and other government agencies, this study is limited to those Navy representatives of the PMA, NAVAIR, and NAVSEA.

An Organizational Analysis of the Harpoon ILS Organization

by

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Lieutenant, United States Navy
B.S., Naval Postgraduate School, 1973

Submitted in partial fulfillment of the
requirements for the degree of

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March 1975

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I. INTRODUCTION

A. BACKGROUND

Weapon system support considerations have acquired considerable importance within the Department of Defense (DOD) and its service components, particularly in the area of major defense system[1] acquisition. This importance is highlighted in DOD Directive 5000.1 and specifically stated by the Secretary of the Navy (SECNAV) for the Department of the Navy (DON) as follows:

> Integrated logistic support effort shall be conducted as an integral part of the acquisition process and pursued to ensure realistic application of ILS considerations as principal design parameters along with cost, technical excellence, and simplicity in operation and maintenance. Continual trade-offs shall be performed to optimize the balance between initial acquisition cost, estimated life cycle cost, schedule and operational capability.[2]

Integrated logistic support (ILS) is defined as "a composite of all the support considerations necessary to assure the effective and economical support of a system for its life cycle. It is an integral part of all other aspects of system acquisition and operation. Integrated logistic support is characterized by harmony and coherence among all the logistic elements."[3]

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[1]Major programs are those programs so designated by the Secretary of Defense/Deputy Secretary of Defense (referred to as SECDEF). DOD Directive 5000.1 (Subj: Acquisition of Major Defense Systems) establishes criteria to be considered.

[2]SECNAVINST 5000.1, Subj: System Acquisition in the Department of the Navy, Encl (3), p.12.

[3]DOD Directive 4100.35, Subj: Development of Integrated Logistic Support for Systems/Equipments.

DON ILS policies and principles were implemented by SECNAV[4] and the Chief of Naval Operations (CNO)[5] with the Chief of Naval Material (NAVMAT)[6] establishing specific guidance. It is the policy of CNO and NAVMAT "that the individual responsible for acquiring the end item be held accountable for the planning and acquisition of the integrated logistic support as well."[7] As delineated by OPNAV, designated Project Managers (in the case of major defense systems) "shall exercise technical and business management and direction over the accomplishment of project objectives."[8] The Project Manager (PM) is assigned the overall responsibility for the weapon system acquisition, including the requisite logistic support.

NAVMAT additionally delineated that "an Integrated Logistic Support Manager (ILSM) shall be designated and assigned to carry out the integrated logistic support function for each acquisition . . ."[9] and that "an Integrated Logistic Support Management Team shall be organized for all

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[4]SECNAVINST 4000.29A, Subj: Development of Integrated Logistic Support for Systems/Equipments.

[5]OPNAVINST 4100.3A, Subj: Department of the Navy Integrated Logistic Support (ILS) System.

[6]NAVMATINST 4000.20A, Subj: Integrated Logistic Support Planning Policy.

[7]Ibid., Foreward.

[8]OPNAV, op. cit., Encl (3), p.3.

[9]NAVMAT, op. cit., p.6.

acquisitions that go through the Formal Acquisition Phases; . . ."[10] The reader is directed to NAVMATINST 4000.20A for a breakdown of the formal acquisition phases as they are not pertinent to this study.

B. STUDY QUESTION

The questions addressed in this study are: How does the Harpoon Integrated Logistic Support Management Team (ILSMT) function, and how effective is it in achieving its ILS objectives? The questions are approached by analyzing organizational effectiveness, with specific attention to:

1. An analytic description of the ILSMT.
2. An assessment of the ILSMT and its supportive role in the project.
3. An evaluation of the current ILSMT effectiveness.
4. Recommendations for improved ILS organizational design for future weapon system acquisitions.

Although the ILSMT is composed of personnel from several functional commands, the contractor, and other government activities, this study will address only the Navy representatives of the project office and the functional commands.

C. METHODOLOGY AND THESIS PRESENTATION

Modern organizational theory has moved toward considering the organization as an open system interacting with its

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[10] Ibid.

environment[11] the open system maintains dynamic equilibrium through the continuous inflow of material, energy and information.[12] Scott's Model[13] was selected as an appropriate model for the analysis and is described in the following section.

This thesis describes the Harpoon ILSMT and fits it to the model in two ways:

1. The organization as it is formally structured and perceived to function based on the author's review of current logistic support directives and literature.

2. The organization as it was found to exist and function during personal interviews with members of the ILSMT.

After a comparison of these two organizations, the structured and the actual, the author attempts to analyze the implications of the research findings and then to make specific recommendations for an improved ILS organizational design for future weapon system acquisitions.

The personal interviews were conducted in Washington, D.C., utilizing a standardized, open-ended questionnaire. Its purpose was to ascertain the attitude of ILSMT personnel and to obtain responses which would fit the analysis system of the model.

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[11] Fremont E. Kast and James E. Rosenzweig, Organization and Management (New York: McGraw-Hill, Inc., 1970), p.135.

[12] Ibid., p. 125.

[13] William G. Scott, "Organizational Theory: An Overview and an Appraisal," Academy of Management Journal, IV, No. 1 (April, 1961), pp. 7-26.

This approach to organizational analysis had some inherent weaknesses and biases which were recognized. First, the responses were not compatible with statistical methods of examination and thus, subject to the personal interpretation of the interviewer. Second, regardless of the careful question preparation, some misunderstanding did exist, resulting in additional explanation by the interviewer and possible bias. Third, only one person of seven people interviewed was assigned solely to Harpoon ILS; all other ILSMT members interviewed had additional assigned ILS responsibilities for other weapon systems, which may have distorted some of their responses. A fourth weakness is the lack of followup interviews due to geographical and time constraints. Finally, the bias generated by the knowledge of all interviewed personnel, that the author is the prospective ILSMT Chairman. In an attempt to overcome this potential bias, it was emphasized that the research was to assist in analyzing an on-going ILS organization and that there would be no personal identification of anyone interviewed.

II. DISCUSSION OF SCOTT'S MODEL

A. SCOTT'S MODEL AND MODERN ORGANIZATION THEORY

The evaluation "model" attributed to William G. Scott is a loosely-woven, flexible structure, composed of a blend of various accepted theories of management. The model is simply Scott's way of describing modern organization theory. Distinctive qualities of the modern theory of organization are its conceptual-analytical base, its reliance on empirical research data, the analysis of decision interactions, and the integration of individual operating modules or work centers into a total organizational system.[14] This model was selected because it treats the organization as a system of mutually dependent variables.

Because a system should be designed to accomplish its purpose or stated objective, the achievement of this objective becomes the true measure of effectiveness for the organizational system. Furthermore, systems concepts emphasize relationships between the parts and how overall system performance is affected by these relationships.

The following discussion summarizes the significant parts of the system and the processes which link these mutually dependent variable parts into an organizational system. This model of modern organizational theory is depicted in Figure 1.

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[14] Ibid., p. 15.

SYSTEM APPROACH OF ORGANIZATION DEVELOPMENT

PARTS OF SYSTEM MUTUALLY DEPENDENT

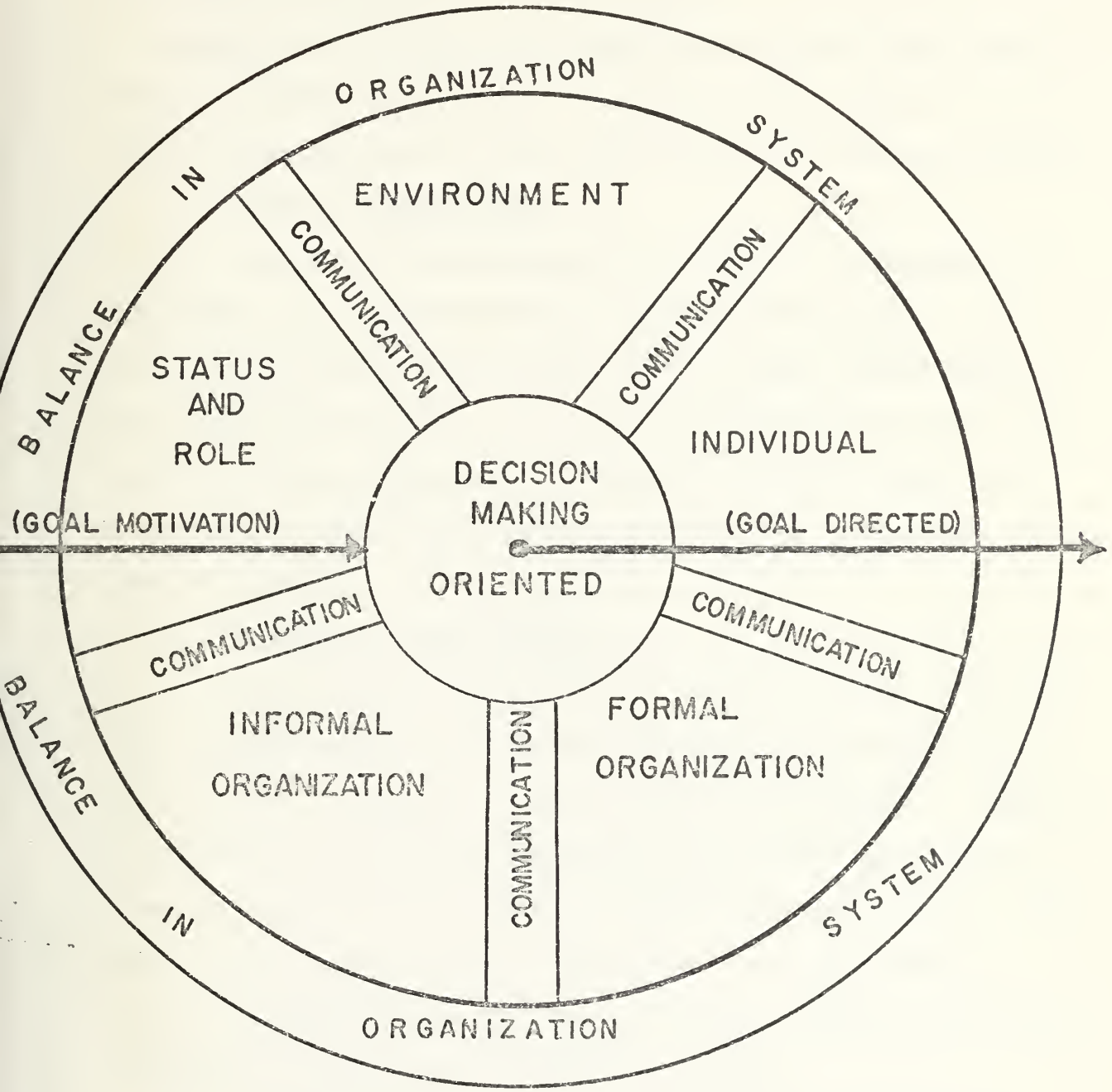

Figure 1. Conceptual Model of Scott's Modern Organization Theory.[15]

[15]LCDR E. A. Zabrycki, "A Model of Modern Organization Theory based W. G. Scott's Model" (paper prepared at Ohio State University, 1972).

B. SIGNIFICANT PARTS OF SCOTT'S MODEL

According to Scott, the significant parts of the system are the formal organization, informal organization, role and status concepts within the organization, and the environment.

1. Formal Organization

The formal organization is a formal arrangement of functions and responsibilities typically displayed on an organization chart and described in an organization manual. The logical arrangement of a formal organization is an outgrowth of basic elements of management theory. They are division of labor, the scaler and functional processes, and span of control.

2. Informal Organization

The informal organization refers to people in group associations at work, but these associations are not specified in the "blueprint" of the formal organization. Generally speaking, the informal organization appears in response to the social need of people to associate with others. More specifically, determinants underlying the appearance of informal organizations are the following: physical location, occupation, interests, and special issues.

3. Role and Status Constructs of Assigned Personnel

A construct is a set of notions, preconceived ideas, sensory perceptions, and interrelating expectancies - it describes a person's viewpoint or perceived idea of some part, or all, of his environment. Both the formal and informal organizations require assigned personnel to assume roles

and at times may place conflicting requirements on them which may be incompatible with the desired organizational behavior.[16]

4. Environment

The environment or physical setting in which the system exists reflects varying degrees of interaction with other organizations or systems. These system interfaces may be classified as supportive, constraintive, or some combination of the two.[17]

C. LINKING PROCESSES IN SCOTT'S MODEL

Although one can say that all of the parts mentioned above are interrelated, system theory must make some attempt to analyze the processes by which the interaction is achieved. Role theory is a contributing factor to certain types of interactional processes, but three other linking activities appear to be universal to human systems of organized behavior. These processes are communication, balance, and decision-making.

1. Communication

"Communication is viewed as the method by which action is evoked from the parts of the system. Communication acts not only as a stimulus resulting in action, but

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[16]Charles W. R. von Radesky, "Attributes of Integrated Logistic Support Organizations Within Selected Navy Weapon Systems Acquisition Projects" (Master's Thesis, Naval Postgraduate School, 1973), pp. 28-29.

[17]Ibid, p. 30.

also as a control and coordination mechanism linking the decision centers in the system into a synchronized pattern."[18]

2. Balance

Balance refers to that equilibrating mechanism or stabilizing force which maintains the various parts of the system in a harmoniously structured relationship - it enables the organization to work. Balance is also a driving force as well as a stabilizing force in that it seeks to preserve system or organizational integrity in the face of unexpected or unplanned-for developments.[19]

3. Decision-Making

The decision process may be looked on as an independent variable upon which organizational survival is based. Faced with an unknown sequence of future events, the decision-maker chooses not only what to do today, but also how to respond to possible events in the future.[20] This decision-making process is a logical extension from the other two linking processes, communication and balance.

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[18]Scott, op. cit., p. 18.

[19]von Radesky, op. cit., p. 29.

[20]Jacob Marschak, "Efficient and Viable Organizational Form," in Modern Organization Theory, ed. by Mason Haire (New York: John Wiley and Sons, 1959), pp. 307-320.

III. HARPOON ANTI-SHIP MISSILE SYSTEM PROJECT OFFICE

A. HISTORICAL BACKGROUND

The Anti-Ship Weapons System (Harpoon) was established in 1970 as a Designated Project under the direction of Naval Air Systems Command (NAVAIR).[21] Naval Ordnance Systems Command (NAVORD)[22] was designated as the Harpoon lead supporting activity.

The Harpoon Weapon System (HWS) is an all-weather, stand-off, ship attack weapon capable of being launched from both Navy aircraft and ships under a wide variety of mission conditions. The HWS is compatible with a variety of ship and aircraft launch systems and an encapsulated version can be launched sub-surface.

The basic missile is identical in all configurations. It incorporates the "round-of-ammunition concept" requiring no assembly, inspection or maintenance at the organizational level. The missile has beyond-the-horizon range, low level cruise trajectory, active guidance, counter-counter measures, and an effective warhead to ensure high survivability and kill probability.

The HWS is approaching the operational evaluation portion of the Weapon System Development Phase and is scheduled

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[21] NAVAIRINST 5400.56/NAVORDINST 5400.30, Subject dealing with establishment of Harpoon Project.

[22] In 1974, Naval Ordnance Systems Command (NAVORD) merged with Naval Ship Systems Command (NAVSHIPS) to form Naval Sea Systems Command (NAVSEA). For purposes of this study, NAVORD will continue to be used.

for fleet introduction late in FY76. It's most unique feature is the joint nature of the management effort required by NAVAIR and NAVORD to develop an effective system. When more than one organization is to provide ILS, NAVMAT requires a written mutual agreement regarding functions and responsibilities for each organization providing logistic element managers (LEMs) and/or resources.[23] The joint ILS agreement was negotiated and promulgated in 1972.[24] This document established the ILS organization, organizational relationships, and the procedures to be followed.

The Harpoon ILS organization is discussed in detail in the next section.

B. PRESENTATION OF THE PROJECT ORGANIZATION STRUCTURE

Figure 2 delineates the current Harpoon Project Organization and is included only to show where the ILSM is located in the organizational structure. The Harpoon ILS organization is established under the Project Manager and is headed by the Readiness Assurance Officer,[25] who is accorded organizational parity with the other functional assistant project managers.

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[23] NAVMAT, op. cit. p. 11.

[24] NAVAIRSYSCOMHQ/NAVORDSYSCOMHQ Joint Letter of 22 Feb 1972, Subj: Anti-Ship Weapons System (HARPOON) Joint ILS Agreement; promulgation of.

[25] Ibid., p. 2.

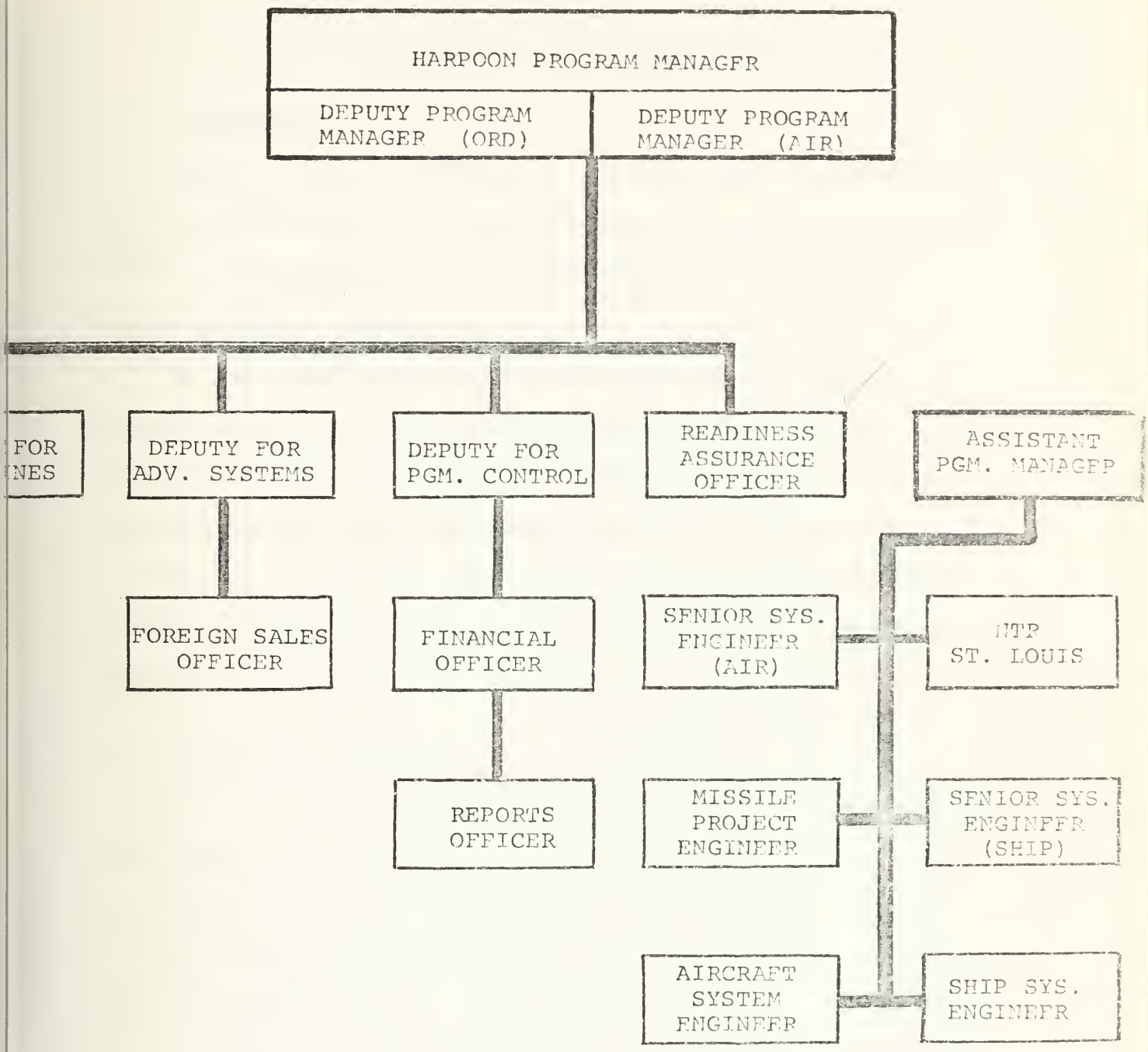

Figure 2. Harpoon Project Organization.

IV. HARPOON ILS ORGANIZATION STRUCTURE

A. INTRODUCTION

This section describes the Harpoon ILSMT organization. It is based upon the author's review of current ILS directives, a literature search, and prior knowledge of ILS organizational design.

As discussed in the previous section, the ILSMT was established by a joint ILS agreement between the two primary functional commands involved - NAVAIR and NAVORD. It is managed by the Readiness Assurance Officer (PMA-2583). The ILSMT serves as the agency for the coordination of joint NAVAIR/NAVORD ILS activity and is the primary vehicle for managing the support of the HWS.

B. STATED ILS OBJECTIVE

The objective of the HWS ILS Program "is to assure that the development of effective logistic support of the HWS is systematically planned, acquired, and managed as an integrated whole to obtain maximum material readiness and optimum cost-effectiveness."[26] The reader is referred to the definition of ILS provided in Section I for amplification of ILS objectives within the DON.

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[26] Harpoon Weapon System Integrated Logistic Support Requirements (AD 674/OD 31990), 15 Jan 1971, p. 1.

C. FORMAL ORGANIZATION STRUCTURE

The ILSMT is the formal ILS organization excluding the PM. By virtue of his charter, the PM has overall responsibility for the weapon system acquisition including logistic support.[27] The ILSMT is comprised of representatives of the Navy, McDonnell Douglas Astronautics Company - East (MDAC-E),[28] associate contractors, and various government staff and field activities. As mentioned in Section I only Navy representatives of the PMA, NAVAIR, and NAVORD are discussed in this analysis. The ILSMT is structured as shown in Figure 3 for purposes of this study.

The Readiness Assurance Officer is the permanent chairman of the ILSMT. The Assistant Project Managers for Logistics (APML's) are co-chairmen and, as such, are the respective NAVAIR/NAVORD ILS staff representatives for all HWS ILS functions originating in/or performed by their commands.

Each ILS functional element reflected in Figure 3, is supported by a cognizant LEM within each of the functional commands. This arrangement is so structured as to permit simultaneous development of peculiar NAVAIR/NAVORD ILS requirements in the differing operational environments of the HWS.

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[27] NAVMAT, op. cit., Forward.

[28] MDAC-E was selected as the prime contractor for the HWS.

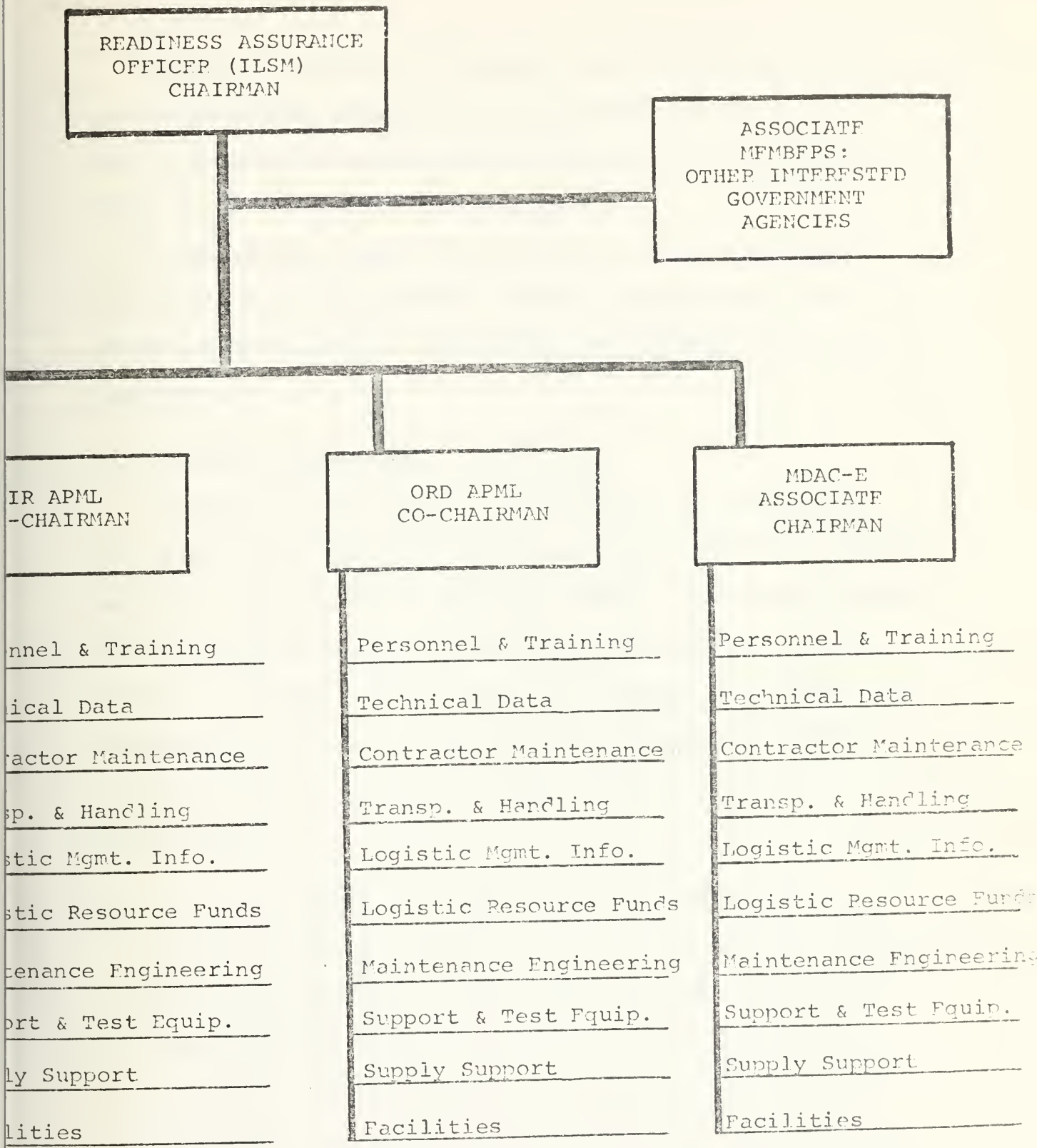

Figure 3. Harpoon ILS Organization.

The MDAC-E Harpoon ILS Manager is the Associate Chairman of the ILSMT, supported by representatives from the MDAC-E functional organization who are LEMs counterparts to those in the NAVAIR/NAVORD structure.

Although the formal organization is neatly structured, the APML's span of authority appears excessive for the ILS iterative type process where continual tradeoffs are being performed.

D. INFORMAL ORGANIZATION DISCUSSION

Evolution of an informal organization is inevitable. One might expect bonds to develop amongst NAVAIR and NAVORD members. A bond might also exist between NAVAIR and NAVORD LEMs responsible for specific logistic elements. These bonds, if present, would result from common objectives (goal congruence) rather than gregarious impulses of the members. A second binding force might result from the satisfaction of mutual needs.

E. ROLE AND STATUS CONSTRUCTS OF ASSIGNED PERSONNEL

The Readiness Assurance Officer, as the Harpoon ILSM, is accorded organizational parity with all other functional assistant project managers (i.e., technical procurement, design, etc.). Should conflicts in policies/objectives between NAVAIR and NAVORD arise, he has the power of resolution. The ILSM is the only member of the ILSMT dedicated to the HWS.

The other permanently assigned ILSMT personnel, the APMLs and LEMs, are dual-hatted, reporting to both the PMA and their respective functional commands. The APMLs, as co-chairmen of the ILSMT, are the respective NAVAIR/NAVORD staff representatives for all ILS functions originating in/or performed by their commands. Subordinate to the APML, the LEM is the recognized expert in the area of his respective logistic support element, and is still a designated representative of his functional command.

Both the APML and the LEM, subject to general guidelines promulgated by their respective commands, wield extensive power and influence in the ILS process.

F. ENVIRONMENT AND PHYSICAL SETTING

The cost-conscious environment of today appears to be readily conducive to active ILS activity. If the various aspects of ILS are properly planned for and managed, reduced or eliminated logistic support resources during the life cycle will result in more effective and efficient life cycle support.

The Harpoon PMA is one of only a few projects where the ILSM is assigned within the project office.[29] Although this assignment was necessary due to the two functional commands involved, it should contribute to improved HWS support.

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[29]Normal procedure is for the ILSM to be assigned within the functional command having control of the acquisition.

The centralized physical setting appears to be suitable for the efficient operation of the ILSMT. All major components of the ILSMT are located in the Crystal City complex, an area approximately four blocks long.

G. LINKING PROCESSES IDENTIFICATION

Although the linking processes (communication, balance, and decision-making) are not readily apparent to the author at this point, a few general comments are made as to how they should occur.

1. Communication System

Communication is vital because all parts of the organization must be stimulated in order to accomplish the intended ILS functions. Because communication is also critical to control and coordination, it is particularly important to the Harpoon ILSMT. It seems reasonable that communication should be accomplished via the formal organization, the meetings of the ILSMT, and the HWS Integrated Logistic Support Plan (ILSP).[30] The ILSP includes management organization, concepts, techniques, schedules and work statements and must be maintained in a current status.[31]

2. Balance/Stabilizing Force

It appears that balance is achieved at two distinct places in the formal organization of the ILSMT. The first point of balance should be the APML. As the ILS staff

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[30] Harpoon Weapon System Integrated Logistics Support Plan (Report No. MDC LS-001), 20 Jan 1973.

[31] HWS ILS Requirements, op. cit., p. 6.

representative for his respective command, he must provide the stabilizing force necessary to ensure that the various LEMs maintain a harmonious, structural relationship to each other in order to get the job done.

The second point of balance should be the ILSMT Chairman, the Readiness Assurance Officer. He should provide the stabilizing force necessary to ensure that the whole ILSMT is working to achieve the desired end results. By virtue of his charter, he is on an organizational par with the other functional assistant project managers and has the authority to resolve conflicts which arise within the ILSMT. He should analyze various alternatives in order to make trade-offs and independent recommendations to the PM.

3. Decision-Making Process

The decision-making process is a logical extension from the other two linking mechanisms: communications and balance. At this point in the study it would seem that decision-making is accomplished at each of the three echelons of the ILSMT: the LEM, the APML, and the ILSM. The LEM should make decisions falling into the purview of his ILS element; the APML should make more general decisions involving more than one ILS element but within his functional command; and, the ILSM should make decisions involving overall ILS activity.

V. INTERVIEW DATA SUMMARY

A. INTRODUCTION

The personal interviews were conducted in Washington, D.C., utilizing standardized, open-ended questionnaires. The personnel being interviewed were asked to respond to the eleven questions delineated below; their individual responses are summarized into a general group response to each question.

B. QUESTIONS AND RESPONSES

1. What is the objective of the ILS function within the Harpoon project, stated or otherwise?

RESPONSE: Answers to this question ranged over the steps of the ILS process - planning, acquiring and managing. Specifically the following aspects were mentioned: defining requirements and existing deficiencies, eliminating deficiencies, and planning for system support. Six of seven answers indicated awareness that logistic support to be effective must be developed as an integrated whole. None of the personnel interviewed made reference to the ultimate objective of ILS: that of obtaining maximum material readiness at optimum cost-effectiveness.

2. What is your objective as a member of the Harpoon ILS Team? If the objective differs, why?

RESPONSE: In responding to this question, the interviewee inevitably discussed the specific ILS aspects of his

logistic element. No one perceived their objective to be different from that of the ILSMT - only more specific in nature. Again six of seven answers were indicative of personal awareness of the necessity for logistic support as an integrated whole, but not one LEM indicated a consideration for the impact of their decisions on other logistic elements. The APML and ILSM did give evidence of managing logistic support as an integrated whole. Again no reference was made to maximizing material readiness in a cost-effective manner or the necessary consideration of different alternatives to achieve this objective.

3. According to the formal Harpoon ILS organization, where are you? (who do you report to and who reports to you).

RESPONSE: All responses to this question indicated a personal knowledge of the formal organizational structure of the ILSMT. Reporting for the most part was accomplished within the formal organization. Three of five LEMs interviewed mentioned occasional interface with the ILSM, but all five recognized the APML as their reporting superior. No one reported to the five LEMs interviewed but one LEM did cite an example of a person outside of the ILSMT coming to him for assistance in problem areas. Both the APML and ILSM recognized the formal organization as being the operating organization.

4. Is this where you should be in the organization? (why and examples).

RESPONSE: For the most part, all personnel interviewed considered themselves to be appropriately placed in the ILSMT. Although a change in the organization was not advocated, some dissatisfaction was noted during responses from three of the LEMs. One indicated that he did not feel he was kept adequately informed of on-going Harpoon activities; another considered himself "a doer"; and the third felt that he was consistently called upon too late in the process. An example provided was in facilities planning - other people, such as the ILSM, attempted to perform this planning function and only called in the appropriate LEM when he ran into difficulty or problems over funds developed. Funds for facilities are normally allocated by MILCON appropriations.

One NAVAIR LEM did express the opinion that his counterpart in NAVSEA should be reporting to him because the Harpoon is a designated NAVAIR project. This opinion was interpreted by the author to mean communication with, not physically reporting to.

5. What are your channels of communication? (input and output) What is your opinion of the effectiveness of this system? (both formal and informal)

RESPONSE: Responses to this question, established the major channel, and in many cases the only channel of communication, to be the formal organization. Little reference was made to official directives such as the Integrated Logistic Support Plan (ILSP), Weapons System Development Plan (WSPD), and Statement of Requirements (SOR), as communication devices.

Only the ILSM, APML, and one LEM indicated attendance at the initial (and only) ILSMT meeting. Both the ILSM and the APML discussed numerous meetings with contractor personnel, but there was little evidence of LEM involvement in these meetings.

Personnel interviewed considered the communications process to be basically effective with only one LEM voicing concern over his not being aware of general program developments. No concern was expressed over the potential impact of the out-of-date ILSP on the ILS process.

6. Is your physical environment/location conducive to the support of the Harpoon ILS objectives? Why?

RESPONSE: All responses to this question indicated that the central location of the ILSMT was conducive to HWS support. Only one LEM was located outside of the Crystal City Complex. His office was in the Washington Navy Yard, approximately twenty minutes away. Centralized location was conducive to HWS support because of the close proximity to each other - a maximum of four blocks separated NAVAIR personnel from NAVORD personnel while all NAVAIR and PMA personnel were within one-half block of each other.

7. How do you perceive your "role" and "status" within the Harpoon project? Are you allowed to make decisions or to participate in the decision-making process within your specific areas of responsibility?

RESPONSE: Typical of the responses to this question were the following: I follow the ILSP to ensure that tasks are

accomplished prior to an established milestone; when I receive a call from the APML or the ILSM about problems, I get hot and clean them up; and, if, I'm not informed of problem areas then I assume everything is progressing as scheduled. Four of five LEMs replied that they considered themselves in the decision-making process for their specific ILS responsibilities and actively participating in on-going ILS activity. The fifth LEM did not consider himself in the decision-making process and that his responsibility was to do as he was told.

8. How do you perceive your dual-hatted responsibility to the functional command and the project office?

RESPONSE: Of the six people interviewed who were assigned to the functional commands, five of them recognized a dual-hatted responsibility to both the functional command and the PMA. Only one LEM did not recognize a dual responsiblity; he saw his responsibility to be solely to the functional command. Of the four LEMs interviewed who recognized a dual responsibility, one saw his primary responsibility to be to the PMA because he perceived the PMA to have the overall management responsibility and authority. The remaining three considered their responsibility to be shared between the functional command and the PMA.

9. Assuming at least minimal accomplishment of objectives, what motivates and balances the ILS organization? Are there factors which tend to detract from the accomplishment of the objectives?

RESPONSE: Four of seven people interviewed perceived the driving force or motivation of the ILSMT to be that of professional pride; two considered the APML to be the driving force while one considered the PMA to be the driving force.

Three factors mentioned as possible detracting factors for the accomplishment of objectives were: a short-sighted approach to the ILSP, the absence of team meetings, and the assignment of the ILSM outside of the functional command.

10. How does the organization really work - what are the lines of communication and how are the decisions/trade-offs made?

RESPONSE: Responses to this question were all indicative that the organization functioned as advertised, i.e., the formal organization. One LEM expressed that decisions/trade-offs were not made at his level. No evidence surfaced at this point to reveal the existence of an informal organization or any alternative method for the achievement of ILS tasks other than the formal organization.

11. What changes would you recommend be made to improve the effectiveness and efficiency of the Harpoon ILS Team?

RESPONSE: Comments to this question were varied as reflected by the following recommendations made by LEMs: (1) a regular schedule for ILSMT meetings, (2) more interface between ILS element managers, (3) more Harpoon program information to the LEMs, including the maintenance of a current WSPD and ILSP, and (4) a formal NAVSEA ILS organization.

Relative to the above recommendations, both the APML and the ILSM considered ILSMT meetings to be a waste of time because of the large number of people involved. Also they stated that the WSPD and ILSP are currently being updated. Finally, they knew that NAVSEA is considering the formal designation of an APML for Harpoon.

VI. ANALYSIS OF THE MAJOR PARTS OF THE HARPOON ILS ORGANIZATION

A. INTRODUCTION

This section fits the actual Harpoon ILSMT to the model and is based on the personal research of the author. The research was conducted with open-ended, standardized questionnaires during interviews with assigned ILSMT personnel. Conclusions are drawn for each significant part of the model with overall conclusions being presented in the following section.

The HWS is divided into six major subsystems of which NAVAIR has cognizance over three and jointly NAVORD/NAVSHIPS (now known as NAVSEA) has cognizance over the remaining three plus the booster assembly. NAVAIR has cognizance over the following subsystems: (1) the basic missile less the booster assembly, (2) Harpoon Aircraft Command and Launch Subsystem (HACLS), and (3) the support subsystem. The combined functional commands of NAVORD and NAVSHIPS have cognizance over the following: (1) Harpoon Shipboard Command and Launch Subsystem (HSCLS), (2) Encapsulated Harpoon Command and Launch Subsystem (EHCLS), and (3) the capsule subsystem. In addition, they should provide inputs to NAVAIR for the support subsystem.

B. STATED OBJECTIVE

1. Discussion

For comparison it is considered worthwhile at this point to requote the stated objective:

> The objective of Integrated Logistic Support Program is to assure that the development of effective logistic support of the HWS is systematically planned, acquired, and managed as an integrated whole to obtain maximum material readiness and optimum cost-effectiveness.[32]

During the course of the interviews, frequent reference was made by the LEMs to the less significant aspects of the ILS Program, those of planning and acquiring. The more important aspect of how the logistic support for their specific ILS element fit into the overall HWS ILS posture was not addressed by any of the LEMs.

Although both the APML and the ILSM recognized their responsibility relative to the management of the ILS Program as an "integrated whole," it was not readily apparent that members of the ILSMT were giving consideration to the achievement of "maximum material readiness and optimum cost-effectiveness."

ILS is described as a process which identifies, in a systematic and orderly manner, the functions which must be performed in support of operation and maintenance and the resources needed to accomplish those functions. Because each act or decision made throughout the system life cycle affects the support requirements, effective logistic support planning must recognize the logistic implications of each

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[32] Ibid., p. 1.

decision and the iterative process necessary to support this dynamic planning system.[33]

If it is assumed that alternative methods of achieving maximum material readiness in a cost-effective manner were considered and trade-offs made during initial ILS planning, then this posture can only be maintained through a dynamic, iterative process where the logistic implications of each decision on "the whole" are evaluated. No evidence of this sort of activity surfaced during the interviews. All members of the ILSMT, except for the ILSM, are a part of the matrix organized functional command. Each of them has the responsibility for providing logistic support for approximately five other weapon systems which are in varying stages of their life cycle. It is difficult to conceive how these people would find it possible to perform the dynamic iterative ILS process for each of their assigned weapon systems.

2. Conclusion

The ILSMT is achieving something less than the stated objective because individual members had to sub-optimize their performance on the Harpoon due to other multiple responsibilities. This type of performance appears to be typical of a matrix organization as presently practiced by the functional commands.

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[33]NAVMAT, op. cit., pp. 2-13 .

C. FORMAL ORGANIZATION

1. Discussion

The Harpoon ILSMT is only partially organized as discussed in Section IV. The PMA, NAVAIR, and NAVORD components are addressed separately.

a. PMA

The Readiness Assurance Officer functions as the chairman and is the designated ILSM. He is the central coordinator for all ILS activity and is responsible directly to the PM for the Harpoon ILS Program. He is the only member of the ILSMT dedicated to the HWS support.

b. NAVAIR

The NAVAIR component of the ILSMT is organized in accordance with NAVMAT policy.[34] An ILSM has been designated for the HWS and LEMs have been assigned for ILS elements identified in the joint agreement between NAVAIR and NAVORD.[35] In addition, since the ILSM is assigned to the PMA, an APML is designated to act as the functional ILS manager for all Harpoon ILS functions originating or performed within NAVAIR. As proposed earlier, the APML's span of authority appears excessive, particularly in a matrix organization. In addition to coordinating the activities of the LEMs, he must fulfill his responsibilities over five other weapon systems.

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[34] Ibid.

[35] HWS Joint Agreement, op. cit., Encl (2).

c. NAVORD

Although a party to the formal joint agreement referred to earlier, NAVORD does not have a formal ILS organization to support the HWS. The only reasons cited by NAVORD personnel for this lack of logistic support was that the HWS was a NAVAIR project and that NAVORD did not receive funds allocated for HWS support. Research did reveal that some consideration is being given to the assignment of a Harpoon APML in the near future.

In view of the lack of NAVORD logistic support, the PMA has tasked Naval Ship Missile System Engineering Station (NSMSES), a NAVORD field activity, to provide ILS effort for the shipboard subsystem. This system is only one of three subsystems assigned to NAVORD and NAVSHIPS. In addition, one NAVORD LEM[36] has been tasked directly by the PMA for the personnel and training logistic element. The tasking of field activities to provide ILS support is properly a responsibility of the parent functional command.

2. Conclusion

The formal organization, as it exists, is not adequate to achieve overall ILS objectives, that of systematically planning, acquiring, and managing logistic support as an integrated whole. The apparent excessive span-of-authority of the APML detracts from his ability to effectively manage an iterative ILS process. The direct tasking

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[36]NAVORD directives refer to ILS Agents vice LEMs.

of a NAVORD field activity by the PMA is his short-term solution to NAVORD's breach of the joint ILS agreement

D. INFORMAL ORGANIZATION

1. Discussion

The author anticipated that during the process of conducting the interviews, the informal organization would emerge if in fact it existed. No evidence surfaced which indicated the existence of an informal organization within the ILSMT. Since the informal organization normally appears in response to the social need of people to associate with others, the following characteristics of the HWS ILSMT probably contributed to its non-existence:

a. Each LEM is unique in his functional responsibilities and goals - the responsibilities and goals for each ILS element are widely dispersed and do not merge below the APML.

b. Interaction and communication between members of the ILSMT consists of an occasional "one-on-one" interface.

c. Only the ILSM is strictly dedicated to the HWS.

Although the ILSM and the APML have considerably more interaction than do other ILSMT members, this action is viewed to be via the formal organization.

2. Conclusion

Although one might think that an informal organization is inevitable in any organization, the identification of one in the HWS is not readily apparent. The author does

recognize that there is the possibility the HWS's informal organization and the formal organization are in actuality the same. However, the lack of adequate data precludes the author from reaching this conclusion.

E. ROLE AND STATUS CONSTRUCTS OF ASSIGNED PERSONNEL

1. Discussion

Four of five LEMs interviewed perceived themselves as having a dual-hatted accountability, to both NAVAIR and the PMA. Of these four, one saw his primary accountability as toward the PMA while another one saw his toward NAVAIR. The fifth LEM interviewed saw his to NAVAIR only

When asked about their role in the decision-making process and the on-going ILS activity, four of the five again responded that they considered themselves to be in the decision-making process and actively participating in ILS activity. The fifth LEM considered himself to be a "doer," having little impact on the ILS decision-making process.

All persons interviewed recognized the APML as the overall ILS coordinator for NAVAIR and the ILSM as having overall ILS responsibility for the HWS.

The LEMs appeared to be aware of the power accorded them as a result of their expertise within their specific ILS elements and their status as designated representatives of the functional commands. They did not acknowledge the critical role that this status accorded them in the achievement of "maximum readiness at optimum cost-effectiveness." They should have been actively engaged in the ILS process providing qualitative data and alternatives to the decision-makers.

2. Conclusion

Although the NAVAIR members of the ILSMT properly perceive their status to be that of a direct representative for the functional command, they are misinterpreting what their proper role in the ILS process should be. Although the majority professed to being in the decision-making process and actively participating in on-going ILS, the LEM's, without exception, did not describe their role in the ILS process to be much more than "a doer" and "a follower of schedules." Their role should be more of an active, dedicated participant in the ILS process. This conclusion closely correlates to the earlier conclusion that the stated objective was not being achieved.

F. ENVIRONMENT AND PHYSICAL SETTING

1. Discussion

The NAVAIR personnel had recently completed a move from the Bailey Crossroads area into the Crystal City Complex where all of the NAVAIR offices including the PMAs are now located in the two Jefferson Plaza buildings. The single NAVORD LEM interviewed was located at the Washington Navy Yard, approximately twenty minutes away by bus, which might be a little inconvenient but not an unworkable situation. NAVORD is located in the National Center approximately four blocks from Jefferson Plaza. All personnel interviewed considered the centralized operation to be more conducive to the efficient operation of the ILSMT.

Research revealed no evidence of an awareness by members of the ILSMT for the cost-conscious environment of today. It would have seemed natural to the author for there to have been some "soul-searching" activity going on. In other words it seems that personnel should have been reassessing their support requirements to determine if the most cost-effective alternatives were being followed.

2. Conclusion

The physical setting of the ILSMT appears to be appropriate for the type of organizational activity required for its present method of operation. It would seem that members of the ILSMT should be responding in a more positive manner to the potentially hostile congressional environment which DOD programs are facing due to spiraling weapon system costs and cost overruns. Although this type of activity should be a part of the iterative ILS process and not necessarily in response to the current environment, it is not occurring.

G. LINKING PROCESSES

The three linking processes are discussed as an entity because of the close correlation between them. Distortion of the overall appraisal would result if they were analyzed separately.

1. Discussion

The majority of ILSMT personnel interviewed indicate that most communication occurs via the formal organization. Direct communication occurs between a LEM and the ILSM only

on an infrequent basis. The ILSP has not been maintained in a current status[37] and is not the communication tool it was intended to be. Another intended communication tool was the ILSMT meetings. After the initial meeting to establish the ILS Program, subsequent meetings were called for by the ILSP every six months or as directed by the Chairman. The initial meeting was held in January, 1973, but no subsequent meetings have been held. As a minimum agenda, the ILSP proposed that the meeting provide for progress reporting, analysis of problem areas, evaluation of schedules, review of funding requirements, and changes to the ILSP, if required.

Balance as a stabilizing force is maintained in the ILSMT by the APML within the functional command and by the ILSM for overall ILS activity. There was little evidence of balance as a driving force. Members of the ILSMT, for the most part, perceive the driving force or motivation to be their professional pride. The team appeared to be incohesive to the point that they did not know what other members were doing.

Although the LEMs interviewed perceived themselves to be in the decision-making process, most decision-making occurred at the level of the APML or ILSM. A LEM's involvement in the process appears to be little more than the making of recommendations or schedule planning.

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[37]The present ILSP is dated 20 Jan 1973 and no changes have been issued. A meeting was held the week of 27 Jan 1975 to revise and update the ILSP.

2. Conclusion

The linking processes are much weaker than they were conceived to be in the planning documents. ILSMT meetings were planned semi-annually and one output of this meeting should have been necessary changes to the ILSP. The ILSP, if current, would be a viable communications tool to ensure that the LEMs were kept current on the overall Harpoon ILS Program. Although the stabilizing force within the ILSMT is properly placed in the APML and ILSM, a general lack of LEM identification with the HWS seriously prohibits the build-up of any personal motivation as a driving force.

The LEMs should contribute more qualitatively to the decision-making process by ensuring that the decision-maker, either the ILSM or the APML, is aware of all viable alternatives for logistic support before making trade offs which lead ultimately to a firm ILS posture. For example, the LEM for facilities was not involved in the site selection for the first Naval Weapons Station (NWS) to support the HWS. He should have been able to offer the ILSM a choice of several sites, with advantages and disadvantages of each. He should have then made a recommendation and justified it to the ILSM.

VII. SUMMARY AND CONCLUSIONS

A. REVIEW OF THESIS PRESENTATION

Given the recent emphasis on ILS in DOD and the author's recent assignment to the Harpoon PMA as the ILSM, the evolution of the study question was quite natural. This study attempts to answer the question: How does the Harpoon ILSMT function and how effective is it in achieving ILS objectives?

The author addresses four aspects of this question:

1. An analytical description of the ILSMT.
2. An assessment of the ILSMT and its supportive role.
3. An evaluation of current ILSMT effectiveness.
4. Recommendations for improved ILS organizational design.

Although the ILSMT is composed of personnel from varied functional commands, the contractor, and other government agencies, the scope of this study is limited to those Navy representatives of the PMA, NAVAIR, and NAVSEA.[38]

Because the objective of the study was to analyze organizational effectiveness and the author proposed to view the organization as a system of mutually dependent variables (modern organizational theory), Scott's Model was selected as an appropriate vehicle for analysis.

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[38]Current terminology is now utilized to facilitate the reader's understanding of the current ILSMT posture and for better understanding of the author's conclusions and recommendations.

Research was conducted via a review of current logistic support directives and personal interviews of members of the ILSMT. The Harpoon ILSMT was described vis-a-vis the model in two different ways: (1) the organization as it was perceived to exist and function, and (2) the actual organization as it was found to exist and function. The author attempted to analyze the differences between the perceived and the actual, what the implications were, and what improvements might be applicable to future ILS organizational designs.

B. CONCLUSIONS ON THE ILS ORGANIZATION

The formal organization, as it exists at the present time, is not adequate to achieve overall ILS objectives. The formal organization, the ILSMT, was so structured as to permit simultaneous development of peculiar NAVAIR/NAVSEA ILS requirements for the differing operational environments of the HWS. This planned simultaneous development is not occurring because a formal ILS organization does not exist within NAVSEA for the HWS.

The lack of a formal organization within NAVSEA to provide overall functional HWS ILS guidance and balance can only be seen as a detriment to the overall ILS objective - that of managing logistic support as an integrated whole.

Although other weaknesses are discussed, the main thread appearing throughout the study is this lack of a formal NAVSEA ILS organization to support the HWS. In the author's view many of the problems seen in the Harpoon ILS organization are directly attributable to this deficiency.

The inevitable informal organization failed to materialize within the Harpoon ILSMT due to the unique nature of each LEM's responsibility, the infrequent interaction between them, and the fact that only the ILSM is dedicated to the HWS. Although this does not give indications of being a significant point, the author considers it to be a contributing factor to the absence of a motivating force. This point is expanded in the discussion of linking processes later in the section.

Although the majority of LEMs interviewed perceived a dual-hatted responsibility to both their functional command and to the PMA, they misinterpret their proper role in the ILS process. As the experts within their respective ILS elements, they have a critical role in the achievement of ILS objectives which is being overlooked. Although professing to be in the decision-making process and actively participating in on-going ILS activity, their tasks, as described by them, define their role to be little more than that of "a doer" and "a follower of schedules." There is no evidence of the iterative ILS decision-making process where the logistic implications of each act and decision are recognized and evaluated.

The centralized operation of the ILSMT appears to be conducive to efficient operation. Although team members are physically separated from each other, the physical setting of the ILSMT appears to be appropriate for the type of organizational activity required by its present method of operation.

Members of the ILSMT expressed no awareness of the increasingly hostile environment DOD programs are facing. Although not necessarily in response to the environment,

this activity should have been a part of the iterative ILS process which, as mentioned in earlier discussion, is not occurring.

Linking processes are the processes by which interaction is achieved in system theory. Without these processes the parts of the system are independent variables with no cohesiveness. In the Harpoon ILSMT the linking processes, communication, balance, and decision-making, are much weaker than they were conceived to be in the planning documents.

Methods of communication were intended to be the formal organization, the ILSP, and ILSMT meetings. Because the ILSP is not current and no recent ILSMT meetings have been held, most communication is achieved via the formal organization. If the ILS process functioned as described in earlier sections, the formal organization would be swamped by the process. The ILSP and team meetings are both viable communication tools which have been allowed to slide into disuse.

Although the data identified "professional pride" as the stabilizing force in the ILSMT, there was no indication that it was a motivating force. ILSMT motivation and group cohesion both appear to be degraded by a lack of personal identification with the HWS. The balance in the ILS organization was the formal organization.

There is little evidence that the LEMs have been participating actively in the decision-making process. The LEMs describe their role as being little more than that of a

passive participant. As the "local expert," their contribution to the process should have been more qualitative, affording the decision-maker more than one viable alternative for logistic support.

Because a system should be designed to accomplish its stated objective, the achievement of this objective is the only true measure of organizational effectiveness. ILS is a process which functions in a systematic, orderly manner. Each act and decision in this dynamic process must be evaluated and its impact on overall logistic support recognized. No evidence of the iterative type planning activity necessary to maintain a dynamic plan for ILS was found. It was not readily apparent that the individual LEMs recognized how the logistic support for their specific ILS elements fit into the overall HWS ILS posture.

Members of the ILSMT did not appear to be giving proper consideration to the achievement of "maximum material readiness and optimum cost-effectiveness" as delineated in the stated objective.[39] Something less than the stated objective is being achieved and, by this measure of performance, the ILSMT is not functioning as effectively as it should.

Given the best of conditions and cooperation between NAVAIR and NAVSEA, the ILSMT would have still fallen short of its stated objective of achieving maximum material

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[39] HWS ILS Requirements, op. cit., p. 1.

readiness at optimum cost-effectiveness. It would not have been achieved for reasons listed below:

1. The iterative type activity required for effective ILS demands people who are committed to the project and its goals. The HWS had only one such individual assigned, the ILSM.

2. In the matrix type functional command, each ILSMT member had the responsibility for ILS activity for approximately five weapon systems in various stages of their life cycles. They, by necessity, sub-optimized their performance.

3. The APML's span of control exceeds that which he can be expected to efficiently control. In addition to the coordination of the LEMs assigned to the HWS, the APML has the additional responsibility for other weapon systems as discussed above. Urwick contends that managers should have a limited span of control because man in general has a limited span of attention.[40]

4. The ILSMT is so large that it cannot be effectively directed as presently organized. Its immense size almost prohibits team meetings as such.

C. RECOMMENDATIONS FOR STRUCTURING AN EFFECTIVE ILS ORGANIZATION

The fourth aspect of the study was to make recommendations for improved ILS organizational design for future weapon system acquisitions. Recognizing that the organization

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[40]Lyndall F. Urwick, "The Manager's Span of Control," Harvard Business Review, Vol. 35 (May-June, 1956), pp.39-47.

of the functional commands is the matrix type and the intent of this study is not to change the whole system of functional commands, the only recourse was to look for improved organizational design within the PMA. This new organization must be capable of working with the matrix organization of the functional commands in an effective, efficient manner.

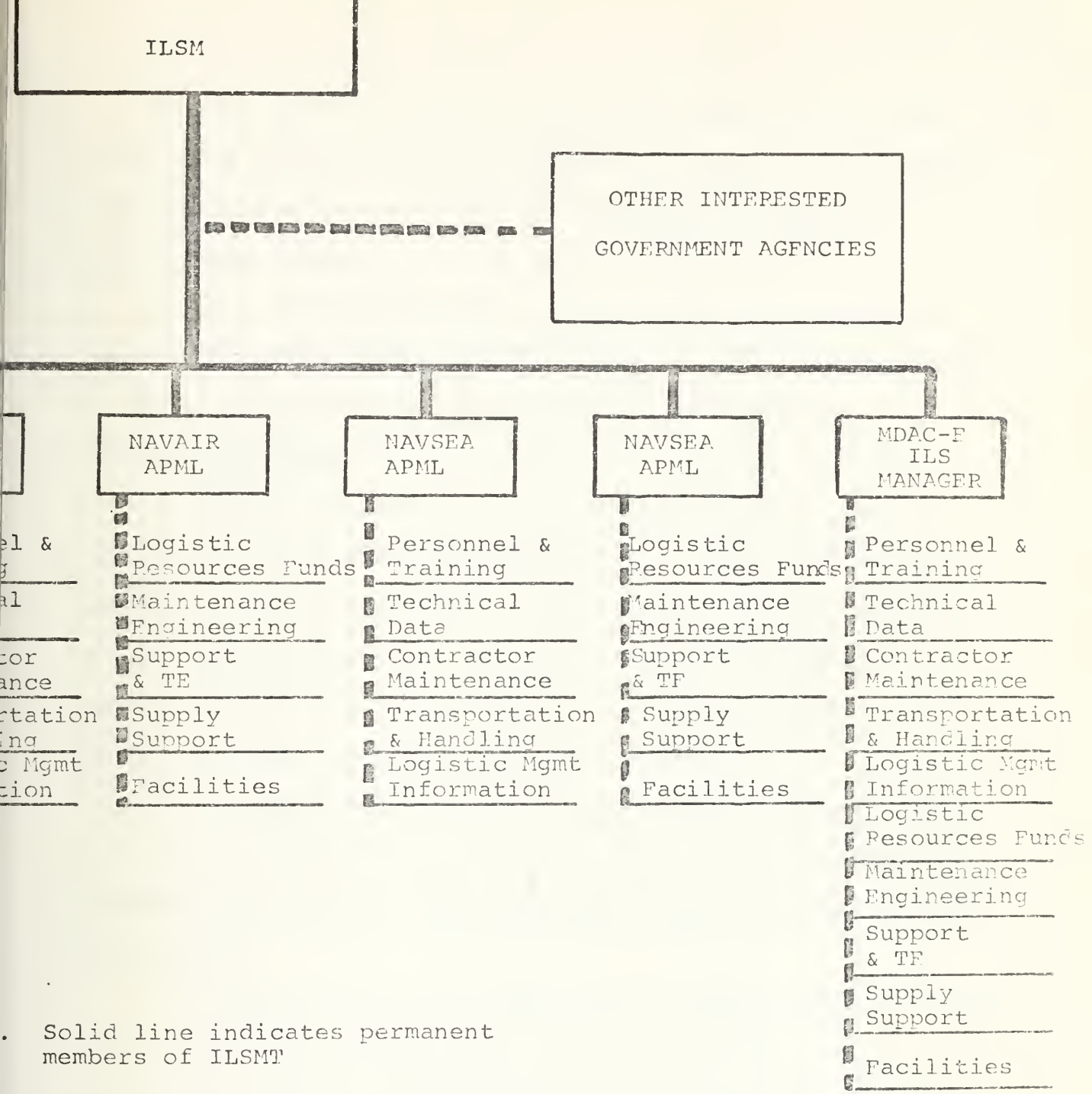
Given the reasons why the present HWS ILSMT cannot effectively function to achieve DON ILS objectives, the author now proposes an ILS organization for future major weapon systems which will eliminate many of the problems existing in the HWS ILSMT.

The proposed ILS organization, delineated in Figure 4, would function in the following manner: The ILSM would remain as the central ILS coordinator for the project and the ILSMT Chairman; the APMLs, two from each functional command, would continue as the functional ILS manager, but would be solely assigned for HWS support while coordinating the HWS activity of approximately five LEMs; the LEMs would continue to function as they have in the past.

The advantages of this proposed organization are:

1. The sole assignment of the APML for the support of the HWS. He should perform much of the iterative ILS activity necessary, calling on the LEMs for assistance as needed.

2. The LEMs could now strive for optimum performance on each weapon system because of reduced expectations from them.



. Solid line indicates permanent members of ILSMT

. Dotted line indicates associate members of ILSMT

Figure 4. Proposed Project ILS Organization.

3. The span of authority for each APML would be one-half the previous span and he would be capable of more effective coordination. Grouping of the LEMs would not be a significant issue.

4. The ILSM would have a direct interface with each permanent member of the ILSMT. The LEMs and representatives of other government agencies would be referred to as associate members.

5. The ILSMT would be more manageable due to its small size, only six permanent members. This size is more appropriate for two reasons: (1) it would now be possible to hold meetings and (2) the members could establish a consensus prior to decision-making. Associate members would be called to team meetings as necessary.

6. A team effort can now be concentrated toward achieving DON ILS objectives and the personal identification with Harpoon could provide the motivating force which was lacking for balance.

Recognizing that constraints to organizational change exist such as available funds and billet numbers, there are two alternative methods of achieving the proposed organization.

1. Assign the APML directly within the PMA.

2. Leave the APML in the functional command but assign him solely to the HWS.

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